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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,398	03/12/2004	Norihito Tsukahara	2004_0211A	6041
513	7590	08/10/2005	EXAMINER	
WENDEROTH, LIND & PONACK, L.L.P.			PATEL, ISHWARBHAI B	
2033 K STREET N. W.			ART UNIT	
SUITE 800			PAPER NUMBER	
WASHINGTON, DC 20006-1021			2841	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/798,398

Applicant(s)

TSUKAHARA ET AL.

Examiner

Ishwar (I. B.) Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 8-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/12/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of group I, specie I, reading on figure 1, claims 1-7, in the reply filed on July 12, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Gilleo et al., US Patent No. 6,252,301 (Gilleo).

Regarding claim 1, Gilleo, in figure 1, discloses an electronic circuit device comprising: an electronic component (100) having a connection terminal (150) on one side thereof; a circuit board (120); an adhesive sheet (110) having a through-hole (aperture 180); and a conductive adhesive provided in said through-hole (conductive polymer 190, column 5, line 8); wherein said electronic component and said circuit board are bonded to each other via said adhesive sheet, and said connection terminal

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on said electronic component and an electrode pad on said circuit board are bonded to each other by said conductive adhesive in said through-hole (see figure 1).

Regarding claim 2, Gilleo further discloses at least one of said connection terminal (150) and said electrode pad (200) protrude into said through-hole (see figure 1).

Regarding claim 3, Gilleo further discloses said circuit board comprises a polymeric resin sheet (column 5, line 16-20).

Regarding claim 4, Gilleo further discloses said polymeric resin sheet is made of polyimide (column 5, line 19-20, made of Kapton®, which is a polyimide film from DuPont).

Regarding claim 5, Gilleo further discloses said conductive adhesive is a conductive paste consisting essentially of conductive particles and a thermosetting resin binder (Column 5, line 8-13).

Regarding claim 6, Gilleo further discloses said adhesive sheet is one of a thermosetting resin sheet and a thermoplastic resin sheet (column 4, line 64-67).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilleo as applied to claims 1, 5 and 6 above, and further in view of Hass et al., US Patent No. 6,245,695.

Regarding claim 7, Gilleo discloses all the features of the claimed invention including said conductive adhesive essentially consists of conductive particles and a thermosetting resin binder (as applied to claim 5 above, Column 5, line 8-13), and said adhesive sheet includes a thermosetting resin (as applied to claim 6 above, column 4, line 64-67).

Gilleo does not explicitly disclose said thermosetting resin being such that it begins to cure at a lower temperature than does said thermosetting resin binder.

However, Gilleo further recites that the adhesive sheet (compliant interposer layer 110 is made with sufficient filler and hardener to provide a solid uncured composite to receive the conductive adhesive into the holes, column 4, line 64 to column 5, line 13).

Hass et al., discloses a bondply material using resin material and further recites that the properties of the resin material including the strength, or durability or heat

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resistance or curing temperature can be adjusted to the desired value by the changing the percentage of resin and adding additives in the material, column 7, line 6-45.

Further, it can be seen from the structure of Gilleo (figure 1) that the adhesive sheet (compliant interposer 110) should be cured first to provide enough rigidity to hold the conductive adhesive in the holes in order to have reliable electrical connection.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to provide the device of Gilleo with said thermosetting resin being such that it begins to cure at a lower temperature than does said thermosetting resin binder, in order to have enough rigidity to the conductive adhesive in the holes to have reliable electrical connection, from the teachings of Hass et al.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Inoue et al. US Patent No. 6,333,469, in figure 7, discloses a wafer (7) with terminals (5) connected to a circuit board with an adhesive layer 4, wherein the terminals (5) protrude into the hole.

Capote et al., US Patent No. 6,297,560, in figure 3, discloses a flip chip structure wherein chip 10 is connected to wiring board 20 with an adhesive sheet 18.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (571) 272 1933. The examiner can normally be reached on M-F (8:30 - 5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272 1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ishwar (I. B.) Patel
Examiner
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August 7, 2005